

REMARKS/ARGUMENTS

Claims 1, 3-10, 14-20, 22-29, 33-39, and 41-45 were rejected under 35 U.S.C. § 102 as being anticipated by Upton et al. The independent claims in this group are claims 1, 20 and 39.

Applicant respectfully traverses this rejection.

As for claim 1, it has been amended to further recite that the image sensor is a CMOS image sensor, including a CMOS pixel array, and the timing and control circuitry is placed adjacent the image sensor in the tubular portion.

Upton discloses a video camera system and related method wherein the imager is described as preferably being either a CMOS imager or a CCD imager. Column 6, lines 1-12 recite the following:

Preferably, imager 32 is an imager which has suitable low power characteristics, such as a CMOS imager, which typically requires only about 30 mW to operate, or a CCD imager which has similar low power characteristics to CMOS imagers. An advantage of a CMOS imager relative to a CCD imager is that a CMOS imager typically is made using the same silicon fabrication processes as most integrated circuits. That allows the image electronics 32a to be built onto, and packaged with, the same piece of silicon as the imager. The result is that a one-chip video camera is possible, in which the imager and related electronics are integrated into a single chip.

With respect to the actual imager which is shown in the drawings and described at other locations within the description, Upton et al. emphasizes a CCD construction for the imager (see for example, Figure 6, line 5, lines 63-64 "this imager is advantageously a solid state imager such as a CCD"). It is also noted that in each of the embodiments disclosed in Upton that the imager

32 is not incorporated within the shaft of the endoscope, but rather, is placed adjacent the proximal end 101.

Because of the size and amount of circuitry required for a CCD camera, it is well known in the art that the CCD camera itself cannot be placed within the shaft of the endoscope based upon size restraints. Accordingly, Upton is simply representative of the disclosure of standard CCD cameras wherein the camera is incorporated proximally of the endoscope shaft. Even though Upton describes that the imager could be a CMOS type, there is no hint or suggestion within Upton that the CMOS camera itself should be placed within the shaft of the endoscope. Furthermore, the type of CMOS camera disclosed in Upton is a "one-chip video camera".

Claim 1 requires that the CMOS image sensor be positioned in the tubular portion adjacent the distal end thereof. Additionally, claim 1 requires that the video processing means be separated from the CMOS imager.

Upton clearly fails to disclose any type of imager wherein elements of the imager are actually placed within the shaft of the endoscope and further, Upton specifically teaches away from a CMOS image sensor wherein video processing circuitry is separated from the CMOS imager in an off-chip arrangement.

With respect to claim 20, it has been amended to further recite that the image sensor is a CMOS imager, the image sensor further including a pixel array of CMOS pixels, and the timing and control circuitry is placed adjacent the image sensor in the tubular portion. For the same reasons as set forth above with respect to claim 1, claim 20 clearly distinguishes over the teachings of Upton.

As for independent claim 39, it has been further amended to recite that the image sensor is a CMOS image sensor, and that the CMOS image sensor further includes a pixel array of CMOS pixels. For the same reasons as set forth above with respect to claim 1, claim 39 clearly distinguishes over Upton because Upton at least fails to teach an image sensor or any elements of a image sensor positioned in the tubular portion (shaft of the endoscope in Upton).

With respect to claim 8, as mentioned above with regard to the basic interpretation of the Upton reference, it is disagreed that Upton discloses a video processor means in the claimed tubular portion. The Examiner referenced column 10, lines 13-54 disclosing this feature of the claimed invention. However, column 10 at this location in Upton simply describes the type of signals transmitted from a control unit to the camera head, and does not disclose the actual location of the video processing circuitry being in the shaft of the endoscope.

With respect to claim 19, it is also disagreed that Upton discloses that the power source and the radio transceiver are mounted in a common housing which is removable with respect to the endoscope. Column 11, lines 25-34 of Upton do not disclose this particular feature of the invention and rather generally discuss the third aspect of Upton which involves communication between the control unit and the camera head by means of a wireless communication interface, but not the particular construction of the device.

With respect to claim 24, this claim requires that the control box wirelessly communicates with the video display by a secondary wireless transmission means. Claim 25 depends from claim 24 and further defines elements of the secondary wireless transmission means. Upton at column 8, lines 41-47 recite that:

"the electronic images are transferred to the control unit 1 by means of the wireless interface, and in step 305, the electronic images are processed by the control unit, e.g., to form a video signal for displaying on a monitor. Finally, in step 306, the images are either displayed, stored, or further transmitted."

Upton is silent as to the manner in which signals are sent to a video display, and Upton certainly has no disclosure of a secondary wireless transmission means wherein there exists a secondary wireless transmitter mounted in the control box and a secondary wireless receiver placed remote from the control box for receiving the post video signal, and electrically transferring the post video signal directly to the video display.

With respect to claim 38, Upton et al. is deficient for the same reasons as set forth in claim 19.

Claims 43 and 44 clearly distinguish over Upton for the same reasons as set forth above with respect to claims 24 and 25.

Claims 2, 21, and 40 were rejected under 35 U.S.C. § 103 as being unpatentable over Upton in view of Yokoi et al. Claims 2, 21 and 40 depend from claims 1, 20, and 39 respectively. Yokoi fails to remedy the deficiencies in Upton. Therefore, this rejection under Section 103 should be withdrawn.

Claims 11, 13, 30 and 32 were rejected under 35 U.S.C. § 103 as being unpatentable over Upton in view of Mahant-Shetti.

With respect to claim 11, the Examiner stated that Upton failed to disclose placing the image sensor on a first plane and the circuitry means for timing and control and the video processing means on the second plane, and that Mahant-Shetti cured this deficiency.

Applicant also respectfully traverses this rejection. Applicant asserts that at most, Mahant-Shetti makes a very single broad statement regarding fabrication of the modified CMOS camera disclosed therein, but does not support the vague statements with any description or drawings. On column 2, lines 65-67 and column 3, lines 1-4, Mahant-Shetti states

"Thus, camera 10 is representative of solid state image sensor technology and may be referred to as a 'camera on a chip'. However, the fabrication of the elements of camera 10 as a single integrated circuit is a design choice. Therefore, if desired, camera 10 could be fabricated as two or more integrated circuits having appropriate interconnections for data and control signals." There is no further discussion which describes the construction of the camera 10 in terms of the camera 10 being fabricated with two or more integrated circuits. Furthermore, the figures in this reference provide no further information or indication as to how the camera could be fabricated on two or more integrated circuits. Therefore, Mahant-Shetti does not cure the deficiencies in Upton, and claim 11 distinguishes over the references.

Regarding claim 13, claim 13 depends from claim 11 and further recites that the second plane is located in the handle. For the same reasons as set forth above with respect to claim 11, claim 13 distinguishes over the cited references.

For the same reasons as set forth above with respect to claim 11, claim 30 also distinguishes over the references because Mahant-Shetti fails to provide disclosure of the manner of construction of a camera as described in claim 30.

With regard to claim 32, claim 32 depends from claim 30, and for the same reasons as set forth above with respect to claims 13 and 11, claim 32 also distinguishes over the cited references.

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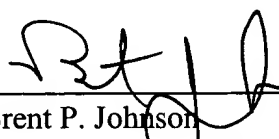
Applicant gratefully acknowledges the allowability of claims 12 and 31 as being dependent upon a rejected base claim, but allowable if rewritten in independent form.

Applicant has made a sincere effort to place the application in a condition for allowance; therefore, such favorable action is earnestly solicited. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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